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From the Editor

This inaugural issue of the Mycorrhiza News comes with greetings to all members of the Network. Proposed to be a quarterly, the Newsletter hopes to provide a forum to experts, scientists, and researchers in different parts of the region for presenting their views and findings on mycorrhiza. Each issue of the Newsletter will include an invited article on mycorrhiza from an eminent scientist in the field. The Network looks forward to a mutually beneficial relationship with the members and as such welcomes feedback, suggestions and ideas from all of you. The first few issues of the Newsletter will bring you news about the Network, its Information Centre and our plans and activities here. Thereafter, it is hoped the Newsletter will evolve with time, ideas and interaction with the readers.

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THE MYCORRHIZA NETWORK : INTRODUCTION

A.K. Oka *

Mycorrhiza research is relatively recent. Although it was in 1885 that I.A.B. Frank made reference for the first time to the term "Mycorrhiza", it took him nine more years to establish the symbiotic relationship between the fungus and its host plant. It took a much longer time to convince the rest of the scientific community of the validity of Frank's theory. Research carried out between 1917 and 1950 confirmed that "mycorrhizal colonization is a beneficial symbiosis between tree and fungus".

During the last two decades research made prodigious progress. This was possible thanks to the rapid developments in scientific instrumentation (hardware) and to the increasing number of scientists becoming involved in mycorrhizal research. It is now recognized that mycorrhizal fungi enhance uptake by the host plant of phosphorous and other nutrients as well as water, thus improving plant tolerance to drought. Moreover, it was found that colonized plants had a better resistance to soil born diseases. In many experiments with forest trees it was demonstrated that plant-mycorrhiza relationship is often essential for plant growth and even survival - particularly in the case of several coniferous species.

At a time when economic and environmental considerations are restricting the use of chemical fertilizers (high energy and production costs, and soil and water polluting effects), the interest attached to mycorrhiza as an alternative solution appears legitimate. Mycorrhizae, acting as a bio-fertilizer and produced with little energy with no polluting effect, can play a key role in future as a partial substitute to chemicals.

The number of mycorrhiza researchers increased rapidly over the years, particularly in North America and, as there was a need for communication between them, it was decided to hold, on a periodic basis, a North American

* Programme Officer (Forestry), IDRC, New Delhi.

International Development Research Centre

Tata Energy Research Institute

CANADA

Conference on mycorrhiza (NACOM). The last NACOM was organized in 1987 in Gainesville and brought together 105 scientists from North America as well as 200 others from the rest of the world (78 participants were from Europe, 25 from Asia and 5 from Africa). With the growing number of its scientists, Europe decided to have its own forum to enable more European researchers to play an active role. The second European Symposium on Mycorrhizae (ESOM) was held in Prague in 1988 and the number of participants was about 250 of which two were from Asia (one from China and one from India).

At present, India alone has over 150 mycorrhiza researchers and China around 200. If we make a rough estimate of the total number of mycorrhiza scientists in Asia the figure could be as high as 400 to 500. Only few of them had the opportunity to attend the NACOMs or the ESOMs or even to meet at national or regional fora. This isolation of the researchers and the lack of communication, instead of promoting complementary work and creating synergistic interactions, led to repeated duplications and limited achievements.

To overcome this problem the International Development Research Centre sponsored in March 1987 the first National Workshop on Mycorrhizae in India and, in January 1988, the first Asian Conference on Mycorrhizae (ACOM). The two events were highly praised by all the participants who expressed the need for continued opportunities to meet and share information and experiences. The Chinese participants at this first ACOM informed their colleagues that China is already organizing national symposia where all mycorrhiza scientists meet on a periodic basis. They also showed interest in considering China as the venue of the second ACOM. The large majority of the participants was in favour of this choice and IDRC expressed its willingness to sponsor the event which would be convened by the Chinese scientific authorities.

Meanwhile it became obvious that workshops, symposia and conferences can only constitute one way of communication and ad hoc cooperation among scientists at national, regional and international levels. If continuous and effective interaction was to be ensured, more elaborate mechanisms were necessary and concrete means had to be provided to the researchers to make cooperation a reality.

In this context and based on the recommendations of the majority of the scientists attending the above gatherings, it was decided to establish a **Mycorrhiza Network** funded (in its initial stage) by IDRC and coordinated by the Tata Energy Research Institute (TERI) based in New Delhi, India.

The general objective of the Mycorrhiza Network is to strengthen research, encourage cooperation, promote exchange of information and germplasm, and facilitate transfer of technology to the field through the establishment of a mycorrhiza research network.

The specific objectives of the Network are:

a) to promote communication between researchers through meetings and workshops;

b) to facilitate the exchange of germplasm;

c) to provide advisory services on research needs, methodology and planning; and

d) to establish a Mycorrhiza Information Centre.

Communication between Researchers

* Direct interaction between scientists is one of the most effective ways to exchange unpublished and latest information and results, develop strong links and establish long-lasting cooperation. This interaction will take place through individual visits, small working group meetings, national meetings and regional conferences.

* Individual visits will be encouraged to enable scientists working on the same specific subject to meet on the job, compare methodologies and results, and execute experiments jointly.

* Small working group meetings of few scientists will be sponsored to provide an opportunity to those working on common issues to share experiences and develop strategies for carrying out concerted research efforts.

* Every two years a national meeting will be organized in India to be attended by all national scientists. One leading scientist from each of the neighboring countries will be invited to attend in order to promote similar national meetings "back home" with the network's help.

* Subsequently, similar national meetings will be promoted in other countries of the region.

Exchange of Germplasm

* Mass production of Vesicular Arbuscular Mycorrhizae (VAMs) under aseptic conditions

has encountered technical difficulties in the past at research laboratory level. A Mycorrhiza Production Research Centre (MPRC) is being established at the Bharatiya Agro-Industries Foundation (BAIF) in Pune, India with IDRC support. The MPRC will receive germplasm from different laboratories for multiplication and storage and will mass produce inoculum on demand for laboratory experiments and field trials.

* Through the Network, mycorrhiza germplasm available in different research institutions and at the MPRC will be recorded and communicated to all Network members who can contact each other directly or through the MPRC to acquire or exchange material.

* More details on the MPRC will be presented in the next issue of the Newsletter.

Advisory Services

The coordinator will help working groups in preparing research plans and programs responding to practical needs. He will design common formats for project proposals to be submitted to funding agencies through the Network. It is expected that such a procedure will avoid duplication of research and will generate larger research funds.

Mycorrhiza Information Centre

Three databases will be created: a scientist database, a research projects database, and a large bibliographic data base. Details on how the MIC will operate are given under a separate article in this issue of the Newsletter.

Network Development Steps

The development of the mycorrhiza Network will take place in phases. The first step will be the strengthening of the national Network initiated in India during the first National Mycorrhiza Workshop and the first Asian Conference, while at the same time establishing contact points in all the Asian countries. The second step will be the promotion of national networks in other countries of the region and the implementation of network mechanisms at regional level. The last step will consist of establishing formal links with countries outside the region.

Originally funded by IDRC, it is expected that in the long run, the Network activities will become self-financed and that IDRC support will progressively be reduced.

Conclusion

The mycorrhiza Network is meant to be a unique communication tool between scientists which will provide them with concrete support for networking activities and for fruitful cooperation.

I wish the Network all success.

IDRC

The International Development Research Centre (IDRC) is a public corporation created by the Parliament of Canada in 1970 to support research designed to adapt science and technology to the needs of developing countries. The Centre's activity is concentrated in five sectors: agriculture, food and nutrition sciences; health sciences; information sciences; social sciences; and communications. IDRC is financed solely by the Parliament of Canada; its policies, however, are set by an International Board of Governors. The Centre's headquarters are in Ottawa, Canada. Regional offices are located in Africa, Asia, Latin America, and the Middle East.

TERI

The Tata Energy Research Institute is a non-profit research organization set up with an aim to develop solutions to the acute energy problems that mankind is likely to face in the future. The objectives of the Institute are:

a) Research, development, application and demonstration of non-depleting and non-polluting sources of energy including solar, wind, tidal and biomass energy.

b) Research, development, application and demonstration of techniques for more efficient and less polluting use of fossil fuels.

At present, work is being done within TERI on several projects dealing with applications of renew-